



Claim Chart for References submitted in Third Information Disclosure Statement for 10/766,488

Claim Chart for Claim 61 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode driver to convert serial |

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| | | data received from a mother board to a laser diode electric signal for a laser diode. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 through B15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module and a photo diode module. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module and a photo diode module. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |

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| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module and a photo diode module. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module and a photo diode module |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module and a photo diode module. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode |

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| | | electric signal for a laser diode. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector, a laser diode driver, a laser diode module and a photo diode module. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module |

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| | | comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| F6 | USP45,34,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module and a photo diode module |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an |

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| G13 | USP4,550,975 | optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector, a laser diode driver, a laser diode module and a photo diode module |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |

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| I7 | USP4,663,603 | signal. |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module and a photo diode module. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module to convert |
| K4 | USP4,847,771 | |

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| K5 | USP4,849,944 | a laser diode electric signal to a laser diode optical signal. |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |

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| L16 | USP5,029,254 | |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module |

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| | | comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module |

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| | | comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module and a photo diode module. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module |

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| | | comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a circuit board to carry thereon a |

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| | | connector, a laser diode driver, a laser diode module and a photo diode module. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial |

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| | | data received from a mother board to a laser diode electric signal for a laser diode. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |

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| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| U11 | USP5,506,922 | U11 through U15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| V2 | USP5,545,845 | These references do not qualify as prior art. |

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| V3 | USP5,546,281 | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electric signal to a laser diode optical signal. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module |

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| | | and a photo diode module. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector, a laser diode driver, a laser diode module and a photo diode module |
| Z10 | JP.63-16496 | Z10 through Z13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | Z14 through Z19 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver" Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |

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| BB2 | Ronald L.Soderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector, a laser diode driver, a laser diode module and a photo diode module |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tlbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct. 1992 ANSI Meeting, Oct. 13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, , , , , FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet. (no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|--|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6., pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |

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| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd.,England,Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik,"Communication Standard Dictionary"p.454.definition of LED,Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| CC11 | Edward R.Salmon,Encapsulation of Electronic Devices and Components,Marcel Dekker Inc.,New York,1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1,Jan.6,1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)---FOC/LAN'87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board to a laser diode electric signal for a laser diode. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct. 1979, https://www.delphion.com/tbds/tbd?o=79A+06370 ,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module and a photo diode module |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb. 1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electric signal to a laser diode optical signal. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer date links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerdings, Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987, https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density,Array,Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 ,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi,The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

Claim Chart for Claim 62-65 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial |

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| | | data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module |

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| | | comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode |

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| | | module,a photo diode module and a semiconductor integrated circuit. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a circuit board to carry thereon a |

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| | | connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |

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| E5 | USP4,510,553 | electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser |

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| | | diode. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| F6 | USP45,34,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |

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| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |

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| H5 | USP4,560,234 | laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |

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| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |

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| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| K13 | USP4,906,197 | K13 through K16 not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an |

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| L7 | USP4,979,794 | optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module |

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| | | comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| N1 | USP5,091,991 | N1 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| N10 | USP5,116,239 | N10 through N14 not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |

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| N14 | USP5,120,578 | laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| O5 | USP5,136,603 | |

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| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module |

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| | | comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |

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| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |

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| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |

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| S5 | USP5,393,249 | laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an |

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| T3 | USP5,443,390 | optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber |

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| | | connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a |

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| | | laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| V1 | USP5,535,364 | V1 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |

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| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an |

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| V14 | USP5,599,595 | optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module |

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| | | comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |

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| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser |

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| | | diode. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |

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| BB2 | Ronald L.Soderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | BB2 and BB4 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System", www.patents.ibm.com/tlbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct. 1992 ANSI Meeting, Oct. 13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, , , , , FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet. (no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser |

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| | | diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6., pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electric signal to a laser diode optical signal, said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module, said laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|---|
| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD3 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbts/s or more. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | DD6 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbts/s or more. |
| DD7 | Ronald L..Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN' 87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received from a mother board through a connector to a laser diode electric signal for a laser diode. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct.1979,https://www.delphion.com/tbds/tbd ?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a circuit board to carry thereon a connector,a laser diode driver,a laser diode module,a photo diode module and a semiconductor integrated circuit. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | DD11 does not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbts/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical ,module comprising a laser diode module including a laser diode,to convert a laser diode electric signal to a laser diode optical signal,said laser diode optical signal adapted for transmission to an optical fiber connected with said laser diode module,said laser diode optical signal having a data trasmission rate of 1000 Mbits/s or more. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer date links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerdings, Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987, https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density,Array,Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 ,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi,The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

Claim Chart for Claim 69-105 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module having an |
| B6 | USP4,176,897 | |

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| B7 | USP4,217,019 | opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical |

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| C4 | USP4,330,870 | module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| C10 | USP4,369,494 | C10 through C16 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical |

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| | | fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received |

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| | | from a computer through a connector. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module having an |
| F2 | USP4,531,810 | |

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| F3 | USP4,533,208 | opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |

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| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received |

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| | | from a computer through a connector. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| I4 | USP4,647,148 | I4 through I15 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | I16 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |

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| J5 | USP4,779,952 | output a laser diode optical signal to the at least one optical fiber. |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |

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| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |

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| M4 | USP5,041,025 | optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module |

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| | | comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module having an |
| O7 | USP5,138,678 | |

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| O8 | USP5,140,663 | opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |

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| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P16 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |

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| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module |
| R15 | USP5,366,664 | |

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| R16 | USP5,372,515 | having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical |

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| T3 | USP5,443,390 | module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| T4 | USP5,446,814 | R4 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical |

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| T16 | USP5,478,260 | module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received |

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| | | from a computer through a connector. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |

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| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a |

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| | | computer through a connector. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module |
| Y16 | JP.4-50901 | |

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| Y17 | JP.4-87809 | having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |

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| Z19 | U-61-158046 | |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| BB2 | Ronald L.Soderstrom et al., "An optical Date Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels,pp.163-173,1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| BB3 | BCP,Inc."Gigabits Over Multimode Optical Fiber"no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Date Links for Workstation and Midrange Computers", IEEE p.505-509,1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint,no date. | BB5 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet,http://www.hp.com/HP-COMP/fiber/hfbr5103.html,Jun.11,1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System".www.patents.ibm.com/tlbs/tdb?&order=93A+60964,April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "OptoElectronics Enterprise Oct.1992 ANSI Meeting,Oct.13,1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| BB9 | IBM, et al,"GLM Family",FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |

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| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lyte! Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6, pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical |

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| Ref | Title | Distinction between reference(s) and claim(s) |
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| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| DD7 | Ronald L. Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)... FOC/LAN' 87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode driver to drive a laser diode module according to serial data received from a computer through a connector. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct. 1979, https://www.delphion.com/tbds/tdb/?o=79A+06370 ,last visited Mar.3,2005. | |
| DD9 | Ronald L. Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a semiconductor integrated circuit to output an electric digital signal according to a photodiode electric signal, a electric digital signal adapted for transmission as serial data to a computer through a connector. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| EE1 | Fibre Distributed Data Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module |

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| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | having an opening adapted for insertion of one of at least one optical fiber, said laser diode module adapted to output a laser diode optical signal to the at least one optical fiber. |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer date links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerdings,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987, https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density,Array,Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 ,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi,The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

Claim Chart for Claims 106-121 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| A15 | USP3,809,908 | A15 through A16 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module to convert |
| B6 | USP4,176,897 | |

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| B7 | USP4,217,019 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical |

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| C4 | USP4,330,870 | module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, |

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| | | which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |

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| G8 | USP4,548,465 | signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |

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| J6 | USP4,789,218 | rate of 1000Mbps/s or more. |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, received from a mother board, into a laser diode electrical signal. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |

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| M4 | USP5,041,025 | optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | N9 does not disclose, at least, an optical module |
| N9 | USP5,113,467 | |

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| | | comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module to convert |
| O7 | USP5,138,678 | |

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| O8 | USP5,140,663 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother |

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| | | board, into a laser diode electrical signal. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |

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| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an |

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| R15 | USP5,366,664 | optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical |

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| T3 | USP5,443,390 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical |

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| T16 | USP5,478,260 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother |

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| | | board, into a laser diode electrical signal. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |

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| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode |

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| | | and a photo diode module are electrically connected to a first edge of the circuit board. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an |

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| Y16 | JP.4-50901 | optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |

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| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|--|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| BB2 | Ronald L.Soderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels,pp.163-173,1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber"no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509,1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint,no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet,http://www.hp.com/HP-COMP/fiber/hfbr5103.html,Jun.11,1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tlbs/tdb?&order=93A+60964, April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct.1992 ANSI Meeting,Oct.13,1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, |

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| | | which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver",Electronic Engineering Times,Aug.1993. | BB11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|--|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications, " June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Sandards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922,Dec.1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6. , pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure,Kenneth Mason Publications Ltd.,England,Apr.1991. | CC7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd.,England,Apr.1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbps/s or more. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik,"Communication Standard Dictionary"p.454.definition of LED,Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| CC11 | Edward R.Salmon,Encapsulation of Electronic Devices and Components,Marcel Dekker Inc.,New York,1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|---|
| DD1 | Dieter Gwinner,Conductive Coatings,Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1,Jan.6,1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)... FOC/LAN'87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a mother board, into a laser diode electrical signal. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct. 1979,https://www.delphion.com/tbds/tdb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected to a first edge of the circuit board. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb. 1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000Mbits/s or more. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer date links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerings, Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector",Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987, https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density,Array,Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 ,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi,The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

Claim Chart for Claims 122-127 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | |
| A14 | USP3,805,116 | |
| A15 | USP3,809,908 | |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| B1 | USP3,990,761 | B1 through B16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | |
| B5 | USP4,167,303 | |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | |
| B9 | USP4,226,491 | |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| C1 | USP4,294,682 | C1 through C16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is |
| C2 | USP4,295,181 | |
| C3 | USP4,301,543 | |
| C4 | USP4,330,870 | |

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| C5 | USP4,345,808 | prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| C6 | USP4,347,655 | |
| C7 | USP4,357,606 | |
| C8 | USP4,360,248 | |
| C9 | USP4,366,565 | |
| C10 | USP4,369,494 | |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 through D16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| D2 | USP4,422,088 | |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | |
| D6 | USP4,437,190 | |
| D7 | USP4,439,006 | |
| D8 | USP4,446,515 | |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | |
| D15 | USP4,486,059 | |
| D16 | USP4,493,113 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| E1 | USP4,501,021 | E1 through E16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| E2 | USP4,502,130 | |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | |
| E7 | USP4,514,586 | |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |

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| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | |
| E16 | USP4,529,266 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| F1 | USP4,530,566 | F1 through F16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | |
| F5 | USP4,534,616 | |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | |
| F10 | USP4,540,237 | |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| G1 | USP4,544,234 | G1 through G16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| G2 | USP4,545,074 | |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | |
| G10 | USP4,548,467 | |
| G11 | USP4,549,782 | |
| G12 | USP4,549,783 | |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |

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| G15 | USP4,553,813 | |
| G16 | USP4,553,814 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| H1 | USP4,556,279 | H1 through H16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | |
| H12 | USP4,580,872 | |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 through I16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | |
| I4 | USP4,647,148 | |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser |
| J2 | USP4,762,388 | |

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|-----|--------------|---|
| J3 | USP4,767,179 | diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| K1 | USP4,840,451 | K1 through K16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| K2 | USP4,844,581 | |
| K3 | USP4,847,711 | |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | |
| K11 | USP4,884,336 | |
| K12 | USP4,897,711 | |
| K13 | USP4,906,197 | |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| L1 | USP4,953,929 | L1 through L16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | |
| L6 | USP4,979,793 | |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | |
| L9 | USP4,989,934 | |

| | | |
|-----|--------------|--|
| L10 | USP4,990,104 | |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| M1 | USP5,035,482 | M1 through M16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | |
| M6 | USP5,044,982 | |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | |
| M16 | USP5,086,422 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| N1 | USP5,091,991 | N1 through N19 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| N2 | USP5,093,879 | |
| N3 | USP5,094,623 | |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | |
| N10 | USP5,116,239 | |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | |
| N16 | USP5,124,885 | |

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| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | |
| N19 | USP5,132,871 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| O1 | USP5,134,677 | O1 through O17 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | |
| O12 | USP5,168,537 | |
| O13 | USP5,170,146 | |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| P1 | USP5,195,911 | P1 through P17 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | |
| P6 | USP5,218,519 | |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | |
| P13 | USP5,247,532 | |
| P14 | USP5,259,052 | |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Q1 | USP5,274,729 | Q1 through Q16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| Q2 | USP5,285,466 | |
| Q3 | USP5,285,511 | |
| Q4 | USP5,285,512 | |
| Q5 | USP5,286,207 | |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | |
| R5 | USP5,337,396 | |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | |
| R10 | USP5,353,634 | |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | |
| R14 | USP5,361,318 | |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| S1 | USP5,375,040 | S1 through S16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |

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| S7 | USP5,398,154 | photo diode module when the module cap is removably attached to an optical module. |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | |
| S11 | USP5,416,668 | |
| S12 | USP5,416,870 | |
| S13 | USP5,416,872 | |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| T1 | USP5,428,704 | T1 through T4 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| T2 | USP5,434,747 | |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 through T9 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| T7 | USP5,455,703 | |
| T8 | USP5,463,532 | |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| T13 | USP5,477,418 | These references do not qualify as prior art. |

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| T14 | USP5,478,253 | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 through U4 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| U2 | USP5,482,658 | |
| U3 | USP5,487,678 | |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |

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| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 through U14 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| U11 | USP5,506,922 | |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| V1 | USP5,535,364 | V1 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser |
| V8 | USP5,554,037 | |

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| V9 | USP5,567,167 | diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| V10 | USP5,577,064 | |
| V11 | USP5,580,269 | |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 through V15 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |

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| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-----------------|---|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X21 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | |
| X10 | EP.0 456 298 B1 | |
| X11 | EP.0 530 791 A2 | |
| X12 | EP.0 535 473 A1 | |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | |
| X16 | EP.0 652 696 A1 | |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | |
| X20 | WO 94/12900 | |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| Y1 | JP.2-151084 | Y1 through Y19 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | |
| Y12 | JP.4-229962 | |

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| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | |
| Y15 | JP.4-270305 | |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Z1 | JP.5-152607 | Z1 through Z19 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | |
| Z4 | JP.5-218581 | |
| Z5 | JP.5-290913 | |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | |
| Z10 | JP.63-16496 | |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|---|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 through BB11 do not disclose, at least, a |

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| BB2 | Ronald L.Soderstrom et al., "An optical Data Link using a CD laser", SPIE Vol. 1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System", www.patents.ibm.com/tlbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "OptoElectronics Enterprise Oct.1992 ANSI Meeting, Oct.13, 1992 | |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, , , , , FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Method Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet, (no date) | |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|---|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6., pp241, 264-65, Nov. 1994 | |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | |

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| CC11 | Edward R.Salmon,Encapsulation of Electronic Devices and Components,Marcel Dekker Inc.,New York,1987 | |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|---|
| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | |
| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)... FOC/LAN' 87&MFOC-WEST,pp.383-385,no date. | |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct.1979,https://www.delphion.com/tbds/tdb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Date Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that foreign matter is prevented from invading into a first opening of the laser diode module and a second opening of the photo diode module when the module cap is removably attached to an optical module. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer date links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerdings,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |

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| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34, No.7B, Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge, IBM Technical Disclosure Bulletin, March 1987, https://www.delphion.com/tdb?o=87A%2060509 , last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings, IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage, IBM Technical Disclosure Bulletin, Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 , last visited Mar.8,2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook, 2nd ed., McGraw Hill, Inc., 1992 | |

Claim Chart for Claims 128-138 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a |

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| | | laser diode. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module |

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| | | comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| C7 | USP4,357,606 | C7 doesnot disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |

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| C15 | USP4,398,780 | the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module |
| D11 | USP4,453,903 | |

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| D12 | USP4,459,658 | including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |

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| E11 | USP4,519,673 | adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |

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| F13 | USP4,541,685 | signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| G2 | USP4,545,074 | G2 and G3 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module |
| G13 | USP4,550,975 | |

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| G14 | USP4,553,811 | including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module |

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| I2 | USP4,634,239 | comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type |

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| | | connector to a laser diode electrical signal for a laser diode. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode driver to convert serial |

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| | | data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |

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| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical |

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| O5 | USP5,136,603 | module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module |

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| | | comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type |

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| | | connector to a laser diode electrical signal for a laser diode. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical |

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| R6 | USP5,340,340 | module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |

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| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. |

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| | | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial |

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| | | data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |

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| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |

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| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into |

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| | | a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module including |
| Y6 | JP.3-94869 | |

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| Y7 | JP.4-109593 | a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for |

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| | | transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for |

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| | | transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| BB2 | Ronald L.Soderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| BB3 | BGP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tbbs/tbdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct. 1992 ANSI Meeting, Oct. 13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, , , , , , FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet. (no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications, " June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode |

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| | | optical signal having a data transmission rate of 1000 Mbits/s or more. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6, pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| DD7 | Ronald LSoderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN'87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode driver to convert serial data received through a surface mount type connector to a laser diode electrical signal for a laser diode. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct. 1979, https://www.delphion.com/tbds/tbdb?o=79A+06370 ,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a sole circuit board to mount thereon a surface mount type connector, a laser diode driver, a laser diode module, a photo diode module and a semiconductor integrated circuit. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb. 1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|--|
| EE1 | Fibre Distributed Data Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module including a laser diode, to convert a laser diode electrical signal into a laser diode optical signal, |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |

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| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | which adapted for transmission to an optical fiber the laser diode optical signal having a data transmission rate of 1000 Mbits/s or more. |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer data links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerings, Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings, Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987,https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992,https://www.delphion.com/tbds/tdb?o=92A%2063485,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook,2nd ed.,McGraw Hill,Inc., 1992 | |

Claim Chart for Claims 139-157 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to |

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| | | which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to |

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| | | which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |

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| F16 | USP4,544,233 | |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G2 | USP4,545,074 | G2 through G3 do not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |

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| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |

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| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |

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| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical |

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| O10 | USP5,157,769 | module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical |

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| P15 | USP5,259,054 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module to convert |
| R2 | USP5,333,221 | |

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| R3 | USP5,333,225 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |

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| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |

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| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-----------------|---|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a |

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| | | first edge of the circuit board. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |

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| Y18 | JP.5-052802 | diode optical signal and transmit the laser diode optical signal. |
| Y19 | JP.5-134147 | Y19 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|--|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L. Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tlbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance..." "Optoelectronics Enterprise Oct. 1992 ANSI Meeting, Oct. 13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet. (no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6., pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|--|
| DD1 | Dieter Gwinner, Conductive Coatings: Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings, no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement, May 11, 1995 | |
| DD3 | Robert C. Herron, High Density Input/Output Connector Systems, 3M Electronic Products Divisions, 1990 | |
| DD4 | Shortwave Opto Assembly, IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1, Jan. 6, 1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge", IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar., 1987 | |
| DD6 | Japanese Standards Association " F04 Type | DD6 does not disclose, at least, an optical module |

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| | Connectors for Optical Fiber Cords JIS C 5973 "Japanese Standards Association, 1990. | comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN'87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct. 1979,https://www.delphion.com/tbds/tdb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board, on which a laser diode electrical signal converter are mounted and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb. 1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|---|
| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer date links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerings,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector",Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987,https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |

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| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings, IEEE Computer Society Press. | |
| EE10 | TDB: Stackable Circuit Card Packaging within a Logic Cage, IBM Technical Disclosure Bulletin, Dec. 1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 , last visited Mar. 8, 2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook, 2nd ed., McGraw Hill, Inc., 1992 | |

Claim Chart for Claims 158 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| A1 | Re.32,502 | A1 through A16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | |
| A14 | USP3,805,116 | |
| A15 | USP3,809,908 | |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | |
| B5 | USP4,167,303 | |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | |
| B9 | USP4,226,491 | |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| C1 | USP4,294,682 | C1 through C16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably |
| C2 | USP4,295,181 | |
| C3 | USP4,301,543 | |
| C4 | USP4,330,870 | |

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| C5 | USP4,345,808 | attachable to an optical module. |
| C6 | USP4,347,655 | |
| C7 | USP4,357,606 | |
| C8 | USP4,360,248 | |
| C9 | USP4,366,565 | |
| C10 | USP4,369,494 | |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| D1 | USP4,408,273 | D1 through D16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| D2 | USP4,422,088 | |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | |
| D6 | USP4,437,190 | |
| D7 | USP4,439,006 | |
| D8 | USP4,446,515 | |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | |
| D15 | USP4,486,059 | |
| D16 | USP4,493,113 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| E1 | USP4,501,021 | E1 through E16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| E2 | USP4,502,130 | |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | |
| E7 | USP4,514,586 | |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |

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| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | |
| E16 | USP4,529,266 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | |
| F5 | USP4,534,616 | |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | |
| F10 | USP4,540,237 | |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 through G16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| G2 | USP4,545,074 | |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | |
| G10 | USP4,548,467 | |
| G11 | USP4,549,782 | |
| G12 | USP4,549,783 | |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | |
| G16 | USP4,553,814 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| H1 | USP4,556,279 | H1 through H16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | |
| H12 | USP4,580,872 | |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| I1 | USP4,629,270 | I1 through I16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | |
| I4 | USP4,647,148 | |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| J1 | USP4,756,593 | J1 through J16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |

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|-----|--------------|--|
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| K1 | USP4,840,451 | K1 through K16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| K2 | USP4,844,581 | |
| K3 | USP4,847,711 | |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | |
| K11 | USP4,884,336 | |
| K12 | USP4,897,711 | |
| K13 | USP4,906,197 | |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | |
| L6 | USP4,979,793 | |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |

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|-----|--------------|--|
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | |
| M6 | USP5,044,982 | |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | |
| M16 | USP5,086,422 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| N1 | USP5,091,991 | N1 through N19 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| N2 | USP5,093,879 | |
| N3 | USP5,094,623 | |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | |
| N10 | USP5,116,239 | |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | |
| N16 | USP5,124,885 | |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | |
| N19 | USP5,132,871 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| O1 | USP5,134,677 | O1 through O17 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | |
| O12 | USP5,168,537 | |
| O13 | USP5,170,146 | |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| P1 | USP5,195,911 | P1 through P17 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | |
| P6 | USP5,218,519 | |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | |
| P13 | USP5,247,532 | |
| P14 | USP5,259,052 | |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Q1 | USP5,274,729 | Q1 through Q16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a |
| Q2 | USP5,285,466 | |
| Q3 | USP5,285,511 | |

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|-----|--------------|--|
| Q4 | USP5,285,512 | photo diode module, and being removably attachable to an optical module. |
| Q5 | USP5,286,207 | |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| R1 | USP5,329,604 | R1 through R16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | |
| R5 | USP5,337,396 | |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | |
| R10 | USP5,353,634 | |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | |
| R14 | USP5,361,318 | |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| S1 | USP5,375,040 | S1 through S16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | |

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|-----|--------------|--|
| S11 | USP5,416,668 | |
| S12 | USP5,416,870 | |
| S13 | USP5,416,872 | |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| T1 | USP5,428,704 | T1 through T4 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| T2 | USP5,434,747 | |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 through T9 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| T7 | USP5,455,703 | |
| T8 | USP5,463,532 | |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 through U4 do not disclose, at least, a module cap comprising a first elastic part to protect a laser |
| U2 | USP5,482,658 | |

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|-----|--------------|---|
| U3 | USP5,487,678 | diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 through U14 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| U11 | USP5,506,922 | |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| V1 | USP5,535,364 | V1 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |

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|-----|--------------|---|
| V5 | USP5,548,641 | V5 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | |
| V11 | USP5,580,269 | |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 through V15 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |

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| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-----------------|--|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X21 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | |
| X10 | EP.0 456 298 B1 | |
| X11 | EP.0 530 791 A2 | |
| X12 | EP.0 535 473 A1 | |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | |
| X16 | EP.0 652 696 A1 | |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | |
| X20 | WO 94/12900 | |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y19 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | |

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|-----|-------------|--|
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | |
| Y15 | JP.4-270305 | |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| Z1 | JP.5-152607 | Z1 through Z19 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | |
| Z4 | JP.5-218581 | |
| Z5 | JP.5-290913 | |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | |
| Z10 | JP.63-16496 | |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 through BB11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels,pp.163-173,1991 | |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber"no date | |

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| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | attachable to an optical module. |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tlbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct. 1992 ANSI Meeting, Oct. 13, 1992 | |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet (no date) | |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|---|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC11 not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6, pp241, 264-65, Nov. 1994 | |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|---|
| DD1 | Dieter Gwinner, Conductive Coatings: Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings, no date. | DD1 through DD11 do not disclose, at least, a module cap comprising a first elastic part to protect |

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|------|--|--|
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | |
| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN '87&MFOC-WEST,pp.383-385,no date. | |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct.1979,https://www.delphion.com/tbds/tdb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|--|
| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, and being removably attachable to an optical module. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer date links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerings,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector",Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987,https://www.delphion.com/tbds/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |

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|------|--|--|
| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings, IEEE Computer Society Press. | |
| EE10 | TDB: Stackable Circuit Card Packaging within a Logic Cage, IBM Technical Disclosure Bulletin, Dec. 1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 , last visited Mar. 8, 2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook, 2nd ed., McGraw Hill, Inc., 1992 | |

Claim Chart for Claims 159-162 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| A1 | Re.32,502 | A1 through A16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | |
| A14 | USP3,805,116 | |
| A15 | USP3,809,908 | |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | |
| B5 | USP4,167,303 | |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | |
| B9 | USP4,226,491 | |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| C1 | USP4,294,682 | C1 through C16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part |
| C2 | USP4,295,181 | |
| C3 | USP4,301,543 | |
| C4 | USP4,330,870 | |

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|-----|--------------|---|
| C5 | USP4,345,808 | and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| C6 | USP4,347,655 | |
| C7 | USP4,357,606 | |
| C8 | USP4,360,248 | |
| C9 | USP4,366,565 | |
| C10 | USP4,369,494 | |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| D1 | USP4,408,273 | D1 through D16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| D2 | USP4,422,088 | |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | |
| D6 | USP4,437,190 | |
| D7 | USP4,439,006 | |
| D8 | USP4,446,515 | |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | |
| D15 | USP4,486,059 | |
| D16 | USP4,493,113 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| E1 | USP4,501,021 | E1 through E16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| E2 | USP4,502,130 | |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | |
| E7 | USP4,514,586 | |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |

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|-----|--------------|--|
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | |
| E16 | USP4,529,266 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | |
| F5 | USP4,534,616 | |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | |
| F10 | USP4,540,237 | |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 through G16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| G2 | USP4,545,074 | |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | |
| G10 | USP4,548,467 | |
| G11 | USP4,549,782 | |
| G12 | USP4,549,783 | |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | |
| G16 | USP4,553,814 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| H1 | USP4,556,279 | H1 through H16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | |
| H12 | USP4,580,872 | |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| I1 | USP4,629,270 | I1 through I16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | |
| I4 | USP4,647,148 | |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |

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| J7 | USP4,798,430 | matter when the module cap is removably attached to an optical module. |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| K1 | USP4,840,451 | K1 through K16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| K2 | USP4,844,581 | |
| K3 | USP4,847,711 | |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | |
| K11 | USP4,884,336 | |
| K12 | USP4,897,711 | |
| K13 | USP4,906,197 | |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | |
| L6 | USP4,979,793 | |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |

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|-----|--------------|--|
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | |
| M6 | USP5,044,982 | |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | |
| M16 | USP5,086,422 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| N1 | USP5,091,991 | N1 through N19 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| N2 | USP5,093,879 | |
| N3 | USP5,094,623 | |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | |
| N10 | USP5,116,239 | |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | |
| N16 | USP5,124,885 | |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | |
| N19 | USP5,132,871 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| O1 | USP5,134,677 | O1 through O17 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | |
| O12 | USP5,168,537 | |
| O13 | USP5,170,146 | |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| P1 | USP5,195,911 | P1 through P17 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | |
| P6 | USP5,218,519 | |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | |
| P13 | USP5,247,532 | |
| P14 | USP5,259,052 | |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Q1 | USP5,274,729 | Q1 through Q16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a |
| Q2 | USP5,285,466 | |
| Q3 | USP5,285,511 | |

| | | |
|-----|--------------|--|
| Q4 | USP5,285,512 | photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| Q5 | USP5,286,207 | |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| R1 | USP5,329,604 | R1 through R16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | |
| R5 | USP5,337,396 | |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | |
| R10 | USP5,353,634 | |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | |
| R14 | USP5,361,318 | |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| S1 | USP5,375,040 | S1 through S16 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | |

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| S11 | USP5,416,668 | |
| S12 | USP5,416,870 | |
| S13 | USP5,416,872 | |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| T1 | USP5,428,704 | T1 through T4 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| T2 | USP5,434,747 | |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 through T9 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| T7 | USP5,455,703 | |
| T8 | USP5,463,532 | |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, a module cap |

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| T16 | USP5,478,260 | comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| U1 | USP5,481,634 | U1 through U4 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| U2 | USP5,482,658 | |
| U3 | USP5,487,678 | |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| U10 | USP5,506,921 | U10 through U14 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| U11 | USP5,506,922 | |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U15 | USP5,534,662 | |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| V1 | USP5,535,364 | V1 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | |

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| V11 | USP5,580,269 | and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 through V15 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |

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| W16 | USP5,836,774 | |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X21 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | |
| X10 | EP.0 456 298 B1 | |
| X11 | EP.0 530 791 A2 | |
| X12 | EP.0 535 473 A1 | |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | |
| X16 | EP.0 652 696 A1 | |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | |
| X20 | WO 94/12900 | |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y19 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | |
| Y15 | JP.4-270305 | |

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| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| Z1 | JP.5-152607 | Z1 through Z19 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | |
| Z4 | JP.5-218581 | |
| Z5 | JP.5-290913 | |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | |
| Z10 | JP.63-16496 | |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|--|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 through BB11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels,pp.163-173,1991 | |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber"no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509,1993. | |

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| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | from foreign matter when the module cap is removably attached to an optical module. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System", www.patents.ibm.com/tdbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct. 1992 ANSI Meeting, Oct. 13, 1992 | |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ***** FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet (no date) | |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|--|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6, pp241, 264-65, Nov. 1994 | |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454, definition of LED, Van Nostrand Reinhold Co. | |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | |
| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN'87&MFOC-WEST,pp.383-385,no date. | |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct. 1979, https://www.delphion.com/tbds/tdb?o=79A+06370 ,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|--|
| EE1 | Fibre Distributed Data Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, a module cap comprising a first elastic part to protect a laser diode module and a second elastic part to protect a photo diode module, such that the first elastic part and the second elastic part protect the laser diode module and the photo diode module from foreign matter when the module cap is removably attached to an optical module. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer data links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineering,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec. 1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987, https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |

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| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings, IEEE Computer Society Press. | |
| EE10 | TDB: Stackable Circuit Card Packaging within a Logic Cage, IBM Technical Disclosure Bulletin, Dec. 1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 , last visited Mar. 8, 2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook, 2nd ed., McGraw Hill, Inc., 1992 | |

Claim Chart for Claims 163-165 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |

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| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode |

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| | | transmits the laser diode optical signal. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C7 | USP4,357,606 | D7 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according |

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| | | to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode and a photo diode module which are electrically connected to a circuit board proximate to a first edge of the circuit board, and a serial connector to transfer serial data which is positioned proximate to and parallel with a second edge of the circuit board. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode driver to covert |
| F2 | USP4,531,810 | |

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| F3 | USP4,533,208 | serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |

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| G8 | USP4,548,465 | diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |

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| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |

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| J6 | USP4,789,218 | producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |

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| K16 | USP4,945,448 | transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |

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| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |

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| N14 | USP5,120,578 | drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode driver to covert serial |

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| | | data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode driver to covert |
| P15 | USP5,259,054 | |

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| P16 | USP5,262,923 | serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode driver to covert |
| R2 | USP5,333,221 | |

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| R3 | USP5,333,225 | serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical |

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| S2 | USP5,383,793 | module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | S10 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| S10 | USP5,414,787 | |
| S11 | USP5,416,668 | |
| S12 | USP5,416,870 | |
| S13 | USP5,416,872 | |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode driver to covert serial |

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| | | data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |

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| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical |

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| V14 | USP5,599,595 | module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---------------|--|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical |

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| X4 | EP 0 232792 A1 | module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical |

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| X21 | JP.1-237783 | module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |

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| AA5 | U-63-82998 | drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels,pp.163-173,1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber"no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509,1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint,no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html ,Jun.11,1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tlbs/tdb?&order=93A +60964,April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct.1992 ANSI Meeting,Oct.13,1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| BB9 | IBM, et al,"GLM Family",FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | BB10 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver",Electronic Engineering Times,Aug.1993. | BB11 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|--|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Sandards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6. , pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | DD6 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| DD7 | Ronald LSoderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN' 87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a serial connector to transfer serial data. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct.1979,https://www.delphion.com/tbds/tbd ?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode driver to covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|--|
| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode driver to |

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| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | covert serial data, which a serial connector transfers, into a laser diode electrical signal and to drive a laser diode according to the laser diode electrical signal, producing a laser diode optical signal such that the laser diode transmits the laser diode optical signal. |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer data links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineering, Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings, Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector",Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987, https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 ,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi,The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

Claim Chart for Claims 166-168 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board, on which a serial |

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| | | connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module |

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| | | comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |

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| E5 | USP4,510,553 | laser diode optical signal based on a laser diode electrical signal. |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

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| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector |

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| | | transfers, into a laser diode electrical signal. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |

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| I8 | USP4,678,264 | electrical signal. |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |

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| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| L9 | USP4,989,934 | |

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| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| O5 | USP5,136,603 | |

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| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module |

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| | | comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| U4 | USP5,491,613 | |

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| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module comprising a laser |

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| | | diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical |

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| | | signal based on a laser diode electrical signal. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-----------------|--|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode electrical |
| X13 | EP.0 588 014 A2 | |

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| X14 | EP.0 600 645 A1 | signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module |
| Y12 | JP.4-229962 | |

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| Y13 | JP.4-230978 | comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module |
| Z11 | JP.63-65967 | |

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| Z12 | JP.63-65978 | comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|--|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels,pp.163-173,1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber"no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint,no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet,http://www.hp.com/HP-COMP/fiber/hfbr5103.html,Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tdbs/tdb?&order=93A+60964, April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct.1992 ANSI Meeting,Oct.13,1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 | BB10 does not disclose, at least, an optical module |

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| | Copper Gigabit Link Module" data sheet.(no date) | comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver",Electronic Engineering Times,Aug.1993. | BB11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|---|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications, " June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922,Dec.1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6. , pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure,Kenneth Mason Publications Ltd.,England,Apr.1991. | CC7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd.,England,Apr.1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik,"Communication Standard Dictionary"p.454.definition of LED,Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| CC11 | Edward R.Salmon,Encapsulation of Electronic Devices and Components,Marcel Deckker Inc.,New York,1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|---|
| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN '87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, which a serial connector transfers, into a laser diode electrical signal. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct.1979,https://www.delphion.com/tbds/tdb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board, on which a serial connector and a laser diode electrical signal converter are mounted and to which a laser diode and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| EE1 | Fibre Distributed Data Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module comprising a laser diode to produce and transmit a laser diode optical signal based on a laser diode electrical signal. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |

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| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer data links", Fiber Optic Datacom and Computer Networks, SPIE-The International Society for Optical Engineering, Vol.1577, pp.174-181, 1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control, a laser safety interlock technique", High-Speed Fiber Networks and Channels, SPIE-The International Society for Optical Engineering Proceedings, Vol.991, pp.179-182, 1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34, No.7B, Dec. 1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting, | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge, IBM Technical Disclosure Bulletin, March 1987, https://www.delphion.com/tdb?o=87A%2060509 , last visited Mar.8, 2005. | |
| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings, IEEE Computer Society Press. | |
| EE10 | TDB: Stackable Circuit Card Packaging within a Logic Cage, IBM Technical Disclosure Bulletin, Dec. 1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 , last visited Mar.8, 2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook, 2nd ed., McGraw Hill, Inc., 1992 | |

Claim Chart for Claim 170 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module to convert |
| B6 | USP4,176,897 | |

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| B7 | USP4,217,019 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical |

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| C4 | USP4,330,870 | module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module |

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| | | comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, received from a motherboard, into a laser diode electrical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module to convert |
| F2 | USP4,531,810 | |

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| F3 | USP4,533,208 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |

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| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, |

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| | | into a laser diode electrical signal. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |

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| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module to |
| K14 | USP4,927,225 | |

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| K15 | USP4,944,568 | convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, |

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| | | into a laser diode electrical signal. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module to |
| N11 | USP5,117,476 | |

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| N12 | USP5,118,362 | convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O10 | USP5,157,769 | |

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| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode module to convert |
| P15 | USP5,259,054 | |

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| P16 | USP5,262,923 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module to convert |
| S2 | USP5,383,793 | |

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| S3 | USP5,388,995 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese |

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|-----|--------------|--|
| | | Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of |

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|-----|--------------|--|
| | | 1000 Mbits/s or more. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | This reference does not qualify as prior art. |

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| U16 | USP5,535,296 | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |

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| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X7 | EP.0 314 651 A2 | |
| X8 | EP.0 413 489 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| X9 | EP.0 437 161 A2 | |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X11 | EP.0 530 791 A2 | |
| X12 | EP.0 535 473 A1 | X11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X16 | EP.0 652 696 A1 | |
| X17 | EP.0 656 696 A1 | X15 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| | | X19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

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| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| BB2 | Ronald LSoderstrom et al., "An optical Date Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173,1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB3 | BGP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Date Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physiscal Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System", www.patents.ibm.com/tdbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance..." "Optoelectronics Enterprise Oct.1992 ANSI Meeting, Oct.13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|--|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications, " June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

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| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6., pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|--|
| DD1 | Dieter Gwinner, Conductive Coatings: Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings, no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement, May 11, 1995 | |
| DD3 | Robert C. Herron, High Density Input/Output Connector Systems, 3M Electronic Products Divisions, 1990 | |
| DD4 | Shortwave Opto Assembly, IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1, Jan. 6, 1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode electrical signal |

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| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge", IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar., 1987 | converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973" Japanese Standards Association, 1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| DD7 | Ronald LSoderstrom et al., A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN' 87&MFOC-WEST, pp.383-385, no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin, Oct. 1979, https://www.delphion.com/tbds/tdb?o=79A+06370 , last visited Mar. 3, 2005. | |
| DD9 | Ronald L. Soderstrom et al., Optical Components and Electronic Packaging for High Performance Optical Data Links, THE RESEARCH INVESTMENT, p. 19-28 (no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and an integrated circuit electrically coupled to a photo diode to produce serial data. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop", Lightwave, Feb. 1994 pp. 58, 67. | DD11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|---|
| EE1 | Fibre Distributed Data Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD), American National Standards Institute, 1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| EE2 | Communications Standard Dictionary; p. 454, definition of inhomogeneous fiber, Van Nostrand Reinhold Publishing, 1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering, p. 19, Button Press, Ltd., April 1980. | |
| EE4 | Ronald L. Soderstrom et al., "CD laser as a fiber optic source for computer data links", Fiber Optic Datacom and Computer Networks, SPIE-The International Society for Optical Engineering, Vol. 1577, pp. 174-181, 1988 | |
| EE5 | David A. Knodel et al., "Open Fibre Control, a laser safety interlock technique", High-Speed Fiber Networks and Channels, SPIE-The International Society for Optical Engineering Proceedings, Vol. 991, pp. 179-182, 1992 | |

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| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34, No.7B, Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge, IBM Technical Disclosure Bulletin, March 1987, https://www.delphion.com/tdb?o=87A%2060509 , last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings, IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage, IBM Technical Disclosure Bulletin, Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 , last visited Mar.8,2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook, 2nd ed., McGraw Hill, Inc., 1992 | |

Claim Chart for Claim 171 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module to convert |
| B6 | USP4,176,897 | |

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| B7 | USP4,217,019 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical |

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| C4 | USP4,330,870 | module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, |

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| | | into a laser diode electrical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |

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| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module |

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| | | comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |

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| H15 | USP4,597,631 | diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |

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| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |

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| M9 | USP5,046,955 | diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of |

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| | | 1000 Mbits/s or more. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q3 | USP5,285,511 | Q3 doesnot disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module to convert |
| R2 | USP5,333,221 | |

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| R3 | USP5,333,225 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |

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| S5 | USP5,393,249 | signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical |

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| V14 | USP5,599,595 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical |

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| X4 | EP 0 232792 A1 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical |

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| X21 | JP.1-237783 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical |

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| Z2 | JP.5-188250 | module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver" Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System", www.patents.ibm.com/tbbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "OptopElectronics Enterprise Oct.1992 ANSI Meeting, Oct.13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications, " June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of |

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| | | 1000 Mbits/s or more. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6., pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| DD1 | Dieter Gwinner, Conductive Coatings: Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings, no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement, May 11, 1995 | |
| DD3 | Robert C. Herron, High Density Input/Output Connector Systems, 3M Electronic Products Divisions, 1990 | |

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| DD4 | Shortwave Opto Assembly, IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1, Jan. 6, 1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge", IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar., 1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973" Japanese Standards Association, 1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| DD7 | Ronald LSoderstrom et al., A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD) ... FOC/LAN '87&MFOC-WEST, pp.383-385, no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin, Oct. 1979, https://www.delphion.com/tbds/tdb?o=79A+06370 , last visited Mar. 3, 2005. | |
| DD9 | Ronald L. Soderstrom et al., Optical Components and Electronic Packaging for High Performance Optical Data Links, THE RESEARCH INVESTMENT, p. 19-28 (no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board mounting thereon a serial connector, a laser diode electrical signal converter and a second converter to convert a voltage signal to serial data. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop", Lightwave, Feb. 1994 pp. 58, 67. | DD11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| EE1 | Fibre Distributed Data Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD), American National Standards Institute, 1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal, which is transmitted at a data transmission rate of 1000 Mbits/s or more. |
| EE2 | Communications Standard Dictionary; p.454, definition of inhomogeneous fiber, Van Nostrand Reinhold Publishing, 1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering, p. 19, Button Press, Ltd., April 1980. | |
| EE4 | Ronald L. Soderstrom et al., "CD laser as a fiber optic source for computer data links", Fiber Optic Datacom and Computer Networks, SPIE-The International Society for Optical Engineering, Vol. 1577, pp. 174-181, 1988 | |

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| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34, No.7B, Dec. 1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987, https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec. 1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 ,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

Claim Chart for Claims 172-175 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal |

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| | | converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical |

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| | | signal and transmit the laser diode optical signal. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module |

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| | | comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |

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| F13 | USP4,541,685 | optical signal and transmit the laser diode optical signal. |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |

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| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |

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| K6 | USP4,857,002 | optical signal and transmit the laser diode optical signal. |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |

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| L14 | USP5,006,286 | signal. |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |

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| N6 | USP5,107,404 | optical signal and transmit the laser diode optical signal. |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical |

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| O10 | USP5,157,769 | module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical |

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| P15 | USP5,259,054 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module to convert |
| R2 | USP5,333,221 | |

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| R3 | USP5,333,225 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |

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| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |

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| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-----------------|--|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit |

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| | | board. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |

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| AA4 | U-63-65978 | diode optical signal and transmit the laser diode optical signal. |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber"no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System", www.patents.ibm.com/tbbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct.1992 ANSI Meeting, Oct.13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications, " June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. |

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| | | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6., pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|--|
| DD1 | Dieter Gwinner, Conductive Coatings: Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings, no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement, May 11, 1995 | |
| DD3 | Robert C. Herron, High Density Input/Output Connector Systems, 3M Electronic Products Divisions, 1990 | |
| DD4 | Shortwave Opto Assembly, IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1, Jan. 6, 1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge", IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar., 1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973" Japanese Standards Association, 1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

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| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN`87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct.1979,https://www.delphion.com/tbds/tldb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| EE1 | Fibre Distributed Data Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer data links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineering,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987,https://www.delphion.com/tldb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |

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| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 ,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi,The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

Claim Chart for Claims 176-177 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal |

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| | | converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical |

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| | | signal and transmit the laser diode optical signal. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module |

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| | | comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |

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| F13 | USP4,541,685 | optical signal and transmit the laser diode optical signal. |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |

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| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |

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| K6 | USP4,857,002 | optical signal and transmit the laser diode optical signal. |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |

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| L14 | USP5,006,286 | signal. |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |

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| N6 | USP5,107,404 | optical signal and transmit the laser diode optical signal. |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical |

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| O10 | USP5,157,769 | module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical |

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| P15 | USP5,259,054 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module to convert |
| R2 | USP5,333,221 | |

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| R3 | USP5,333,225 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |

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| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |

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| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-----------------|--|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit |

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| | | board. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| Z1 | JP.5-152607 | Z1 through Z2 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |

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| AA4 | U-63-65978 | diode optical signal and transmit the laser diode optical signal. |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|---|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173,1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB3 | BGP, Inc. "Gigabits Over Multimode Optical Fiber"no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509,1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tlbs/tdb?&order=93A +60964, April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance..." "Optoelectronics Enterprise Oct. 1992 ANSI Meeting, Oct. 13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications, " June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. |

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| | | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6., pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|--|
| DD1 | Dieter Gwinner, Conductive Coatings: Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings, no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement, May 11, 1995 | |
| DD3 | Robert C. Herron, High Density Input/Output Connector Systems, 3M Electronic Products Divisions, 1990 | |
| DD4 | Shortwave Opto Assembly, IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1, Jan. 6, 1993 | DD4 through DD5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge", IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar., 1987 | |
| DD6 | Japanese Standards Association "F04 Type Connectors for Optical Fiber Cords JIS C 5973" Japanese Standards Association, 1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

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| DD7 | Ronald LSoderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN '87&MFOC-WEST,pp.383-385,no date. | DD7 and DD9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct.1979,https://www.delphion.com/tbds/tdb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and photo diode module are electrically connected proximate to a first edge of the circuit board. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| EE1 | Fibre Distributed Data Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer data links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineering,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector",Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987,https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density,Array,Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |

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| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 ,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi,The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

Claim Chart for Claims 178-179 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal |

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| | | converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical |

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| | | signal and transmit the laser diode optical signal. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module |

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| | | comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |

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| F13 | USP4,541,685 | optical signal and transmit the laser diode optical signal. |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

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| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
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| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |

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| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical |

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| K4 | USP4,847,771 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module to convert |
| L11 | USP4,991,062 | |

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| L12 | USP5,002,495 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical |

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| N4 | USP5,101,463 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module to convert |
| O7 | USP5,138,678 | |

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| O8 | USP5,140,663 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O13 | USP5,170,146 | O13 through O16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode |

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| | | module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |

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| S5 | USP5,393,249 | signal. |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

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| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese |

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| | | Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |

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| W8 | USP5,724,729 | 1994, in Japan. |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-----------------|--|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode |

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| | | module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |

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| Y18 | JP.5-052802 | diode optical signal and transmit the laser diode optical signal. |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|---|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver" Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB2 | Ronald LSoderstrom et al., "An optical Date Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Date Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System", www.patents.ibm.com/tdbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct.1992 ANSI Meeting, Oct.13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6, pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|--|
| DD1 | Dieter Gwinner, Conductive Coatings: Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings, no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement, May 11, 1995 | |
| DD3 | Robert C. Herron, High Density Input/Output Connector Systems, 3M Electronic Products Divisions, 1990 | |
| DD4 | Shortwave Opto Assembly, IBM Optoelectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1, Jan. 6, 1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge", IBM Technical Disclosure Bulletin, vol. 29 No. 10, Mar., 1987 | |
| DD6 | Japanese Standards Association "F04 Type Connectors for Optical Fiber Cords JIS C 5973" Japanese Standards Association, 1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN' 87&MFOC-WEST,pp.383-385,no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct.1979,https://www.delphion.com/tbds/tdb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected proximate to a first edge of the circuit board. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer data links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerdings,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987,https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |

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| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings, IEEE Computer Society Press. | |
| EE10 | TDB: Stackable Circuit Card Packaging within a Logic Cage, IBM Technical Disclosure Bulletin, Dec. 1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 , last visited Mar. 8, 2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook, 2nd ed., McGraw Hill, Inc., 1992 | |

Claim Chart for Claims 180-181 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | A13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A14 | USP3,805,116 | A14 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| A15 | USP3,809,908 | A15 and A16 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| B1 | USP3,990,761 | B1 through B3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | B4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B5 | USP4,167,303 | B5 through B7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | B8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B9 | USP4,226,491 | B9 and B10 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | B11 through B13 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | B14 and B15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | B16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| C1 | USP4,294,682 | C1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C2 | USP4,295,181 | C2 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C3 | USP4,301,543 | C3 and C4 do not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| C4 | USP4,330,870 | |
| C5 | USP4,345,808 | C5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C6 | USP4,347,655 | C6 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode |

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| | | module and a photo diode module are electrically connected. |
| C7 | USP4,357,606 | C7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| C8 | USP4,360,248 | C8 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C9 | USP4,366,565 | C9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| C10 | USP4,369,494 | C10 through C15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | C16 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D2 | USP4,422,088 | D2 through D4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | D5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D6 | USP4,437,190 | D6 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, |

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| | | into a laser diode electrical signal. |
| D7 | USP4,439,006 | D7 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| D8 | USP4,446,515 | D8 and D9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | D10 through D13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | D14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| D15 | USP4,486,059 | D15 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| D16 | USP4,493,113 | D16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| E1 | USP4,501,021 | E1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E2 | USP4,502,130 | E2 through E5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | E6 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |

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| E7 | USP4,514,586 | E7 through E14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | E15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| E16 | USP4,529,266 | E16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | F4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F5 | USP4,534,616 | F5 through F8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | F9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| F10 | USP4,540,237 | F10 through F16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| G1 | USP4,544,234 | G1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G2 | USP4,545,074 | G2 and G3 do not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | G4 through G8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | G9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G10 | USP4,548,467 | G10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G11 | USP4,549,782 | G11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G12 | USP4,549,783 | G12 through G14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | G15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| G16 | USP4,553,814 | G16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| H1 | USP4,556,279 | H1 through H10 do not disclose, at least, an optical module comprising a laser diode module to convert |
| H2 | USP4,556,281 | |

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| H3 | USP4,556,282 | a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | H11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| H12 | USP4,580,872 | H12 through H16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 and I2 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | I3 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| I4 | USP4,647,148 | I4 through I16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J15 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | J16 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| K1 | USP4,840,451 | K1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K2 | USP4,844,581 | K2 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| K3 | USP4,847,711 | K3 through K9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | K10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K11 | USP4,884,336 | K11 does not disclose, at least, an optical module |

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| | | comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K12 | USP4,897,711 | K12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| K13 | USP4,906,197 | K13 through K16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | L5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L6 | USP4,979,793 | L6 and L7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | L8 and L9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | L10 through L16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |

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| M4 | USP5,041,025 | optical signal and transmit the laser diode optical signal. |
| M5 | USP5,043,775 | M5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M6 | USP5,044,982 | M6 through M14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | M15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| M16 | USP5,086,422 | M16 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| N1 | USP5,091,991 | N1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N2 | USP5,093,879 | N2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N3 | USP5,094,623 | N3 through N8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | N9 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N10 | USP5,116,239 | N10 through N14 do not disclose, at least, an |

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| N11 | USP5,117,476 | optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | N15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N16 | USP5,124,885 | N16 and N17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | N18 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| N19 | USP5,132,871 | N19 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| O1 | USP5,134,677 | O1 through O3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | O4 and O5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | O6 through O8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | O9 and O10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | O11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O12 | USP5,168,537 | O12 does not disclose, at least, an optical module |

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| | | comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| O13 | USP5,170,146 | O13 through O17 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| P1 | USP5,195,911 | P1 through P4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | P5 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P6 | USP5,218,519 | P6 through P11 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | P12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| P13 | USP5,247,532 | P13 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| P14 | USP5,259,052 | P14 through P16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | P17 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Q1 | USP5,274,729 | Q1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q2 | USP5,285,466 | Q2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q3 | USP5,285,511 | Q3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q4 | USP5,285,512 | Q4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Q5 | USP5,286,207 | Q5 through Q16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| R1 | USP5,329,604 | R1 through R3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | R4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R5 | USP5,337,396 | R5 and R6 do not disclose, at least, an optical |

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| R6 | USP5,340,340 | module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R7 | USP5,345,524 | R7 and R8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | R9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| R10 | USP5,353,634 | R10 through R12 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | R13 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| R14 | USP5,361,318 | R14 through R16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| S1 | USP5,375,040 | S1 through S9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | S10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S11 | USP5,416,668 | S11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser |

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| | | diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S12 | USP5,416,870 | S12 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| S13 | USP5,416,872 | S13 through S16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| T1 | USP5,428,704 | T1 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T2 | USP5,434,747 | T2 and T3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | T4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T7 | USP5,455,703 | T7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| T8 | USP5,463,532 | T8 and T9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. |

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| T11 | USP5,470,259 | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T12 | USP5,475,734 | T12 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| U1 | USP5,481,634 | U1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U2 | USP5,482,658 | U2 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U3 | USP5,487,678 | U3 and U4 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, an optical module comprising a laser diode electrical signal converter |

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| | | to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| U11 | USP5,506,922 | U11 through U14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| V1 | USP5,535,364 | V1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | V10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a |

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| | | motherboard, into a laser diode electrical signal. |
| V11 | USP5,580,269 | V11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 and V14 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | V15 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X6 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | X7 and X8 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | X9 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X10 | EP.0 456 298 B1 | X10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X11 | EP.0 530 791 A2 | X11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X12 | EP.0 535 473 A1 | X12 through X14 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | X15 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| X16 | EP.0 652 696 A1 | X16 through X18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | X19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a |

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| | | motherboard, into a laser diode electrical signal. |
| X20 | WO 94/12900 | X20 and X21 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | Y5 through Y7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | Y8 through Y10 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | Y11 through Y13 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | Y14 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Y15 | JP.4-270305 | Y15 through Y18 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | Y19 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| Z1 | JP.5-152607 | Z1 and Z2 do not disclose, at least, an optical |

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| Z2 | JP.5-188250 | module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z3 | JP.5-211379 | Z3 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z4 | JP.5-218581 | Z4 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| Z5 | JP.5-290913 | Z5 through Z8 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | Z9 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| Z10 | JP.63-16496 | Z10 through Z19 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|--|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver" Feb. 1994 preliminary data sheet.p.2-10 | BB1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

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| BB2 | Ronald L.Soderstrom et al., "An optical Date Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | BB2 through BB4 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Date Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physiscal Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | BB5 does not disclose, at least, an optical module comprising a single circuit board on which a serial connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | BB6 and BB7 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tddb/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance..." "OptopElectronics Enterprise Oct.1992 ANSI Meeting, Oct.13, 1992 | BB8 and BB9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet. (no date) | BB10 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | BB11 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Sandards?" no date. | CC3 through CC5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6. , pp241, 264-65, Nov. 1994 | CC6 does not disclose, at least, an optical module |

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| | | comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | CC7 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | CC8 and CC9 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | CC10 does not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | CC11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|--|
| DD1 | Dieter Gwinner, Conductive Coatings: Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings, no date. | DD1 through DD3 do not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement, May 11, 1995 | |
| DD3 | Robert C. Herron, High Density Input/Output Connector Systems, 3M Electronic Products Divisions, 1990 | |
| DD4 | Shortwave Opto Assembly, IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1, Jan. 6, 1993 | DD4 and DD5 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge", IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar., 1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973" Japanese Standards Association, 1990. | DD6 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| DD7 | Ronald LSoderstrom et al., A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD) ... FOC/LAN '87&MFOC-WEST, pp.383-385, no date. | DD7 through DD9 do not disclose, at least, an optical module comprising a laser diode electrical signal converter to convert serial data, received from a motherboard, into a laser diode electrical signal. |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin, Oct. 1979, https://www.delphion.com/tbds/tdb?o=79A+06370 , last visited Mar. 3, 2005. | |
| DD9 | Ronald L. Soderstrom et al., Optical Components and Electronic Packaging for High Performance Optical Data Links, THE RESEARCH INVESTMENT, p.19-28 (no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | DD10 does not disclose, at least, an optical module comprising a single circuit board on which a serial |

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| | | connector and a laser diode electrical signal converter are mounted, and to which a laser diode module and a photo diode module are electrically connected. |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop", Lightwave, Feb. 1994 pp.58,67. | DD11 does not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|--|
| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD), American National Standards Institute, 1996. | EE1 through EE11 not disclose, at least, an optical module comprising a laser diode module to convert a laser diode electrical signal into a laser diode optical signal and transmit the laser diode optical signal. |
| EE2 | Communications Standard Dictionary; p.454, definition of inhomogeneous fiber, Van Nostrand Reinhold Publishing, 1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering, p.19, Button Press, Ltd., April 1980. | |
| EE4 | Ronald L. Soderstrom et al., "CD laser as a fiber optic source for computer data links", Fiber Optic Datacom and Computer Networks, SPIE-The International Society for Optical Engineering, Vol. 1577, pp. 174-181, 1988 | |
| EE5 | David A. Knodel et al., "Open Fibre Control, a laser safety interlock technique", High-Speed Fiber Networks and Channels, SPIE-The International Society for Optical Engineering Proceedings, Vol. 991, pp. 179-182, 1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol. 34, No. 7B, Dec. 1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge, IBM Technical Disclosure Bulletin, March 1987, https://www.delphion.com/tdb?o=87A%2060509 , last visited Mar. 8, 2005. | |
| EE9 | K.P. Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings, IEEE Computer Society Press. | |
| EE10 | TDB: Stackable Circuit Card Packaging within a Logic Cage, IBM Technical Disclosure Bulletin, Dec. 1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 , last visited Mar. 8, 2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook, 2nd ed., McGraw Hill, Inc., 1992 | |

Claim Chart for Claims 182-183 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | |
| A14 | USP3,805,116 | |
| A15 | USP3,809,908 | |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| B1 | USP3,990,761 | B1 through B16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | |
| B5 | USP4,167,303 | |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | |
| B9 | USP4,226,491 | |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| C1 | USP4,294,682 | C1 through C16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, |
| C2 | USP4,295,181 | |
| C3 | USP4,301,543 | |
| C4 | USP4,330,870 | |

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| C5 | USP4,345,808 | such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| C6 | USP4,347,655 | |
| C7 | USP4,357,606 | |
| C8 | USP4,360,248 | |
| C9 | USP4,366,565 | |
| C10 | USP4,369,494 | |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 through D16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| D2 | USP4,422,088 | |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | |
| D6 | USP4,437,190 | |
| D7 | USP4,439,006 | |
| D8 | USP4,446,515 | |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | |
| D15 | USP4,486,059 | |
| D16 | USP4,493,113 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| E1 | USP4,501,021 | E1 through E16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| E2 | USP4,502,130 | |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | |
| E7 | USP4,514,586 | |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |

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| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | |
| E16 | USP4,529,266 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| F1 | USP4,530,566 | F1 through F16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | |
| F5 | USP4,534,616 | |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | |
| F10 | USP4,540,237 | |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| G1 | USP4,544,234 | G1 through G16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| G2 | USP4,545,074 | |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | |
| G10 | USP4,548,467 | |
| G11 | USP4,549,782 | |
| G12 | USP4,549,783 | |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | |
| G16 | USP4,553,814 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| H1 | USP4,556,279 | H1 through H16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | |
| H12 | USP4,580,872 | |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 through I16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | |
| I4 | USP4,647,148 | |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |

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|-----|--------------|---|
| J7 | USP4,798,430 | projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| K1 | USP4,840,451 | K1 through K16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| K2 | USP4,844,581 | |
| K3 | USP4,847,711 | |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | |
| K11 | USP4,884,336 | |
| K12 | USP4,897,711 | |
| K13 | USP4,906,197 | |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| L1 | USP4,953,929 | L1 through L16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | |
| L6 | USP4,979,793 | |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |

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|-----|--------------|--|
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| M1 | USP5,035,482 | M1 through M16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | |
| M6 | USP5,044,982 | |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | |
| M16 | USP5,086,422 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| N1 | USP5,091,991 | N1 through N19 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| N2 | USP5,093,879 | |
| N3 | USP5,094,623 | |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | |
| N10 | USP5,116,239 | |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | |
| N16 | USP5,124,885 | |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | |
| N19 | USP5,132,871 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| O1 | USP5,134,677 | O1 through O17 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | |
| O12 | USP5,168,537 | |
| O13 | USP5,170,146 | |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| P1 | USP5,195,911 | P1 through P17 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | |
| P6 | USP5,218,519 | |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | |
| P13 | USP5,247,532 | |
| P14 | USP5,259,052 | |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| Q1 | USP5,274,729 | Q1 through Q16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo |
| Q2 | USP5,285,466 | |
| Q3 | USP5,285,511 | |

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| Q4 | USP5,285,512 | diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| Q5 | USP5,286,207 | |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| R1 | USP5,329,604 | R1 through R16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | |
| R5 | USP5,337,396 | |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | |
| R10 | USP5,353,634 | |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | |
| R14 | USP5,361,318 | |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| S1 | USP5,375,040 | S1 through S16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | |

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| S11 | USP5,416,668 | |
| S12 | USP5,416,870 | |
| S13 | USP5,416,872 | |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| T1 | USP5,428,704 | T1 through T4 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| T2 | USP5,434,747 | |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 through T9 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| T7 | USP5,455,703 | |
| T8 | USP5,463,532 | |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the |

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| | | module cap is attached to the optical module. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 through U4 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| U2 | USP5,482,658 | |
| U3 | USP5,487,678 | |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| U8 | USP5,499,312 | U8 does not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 through U14 not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| U11 | USP5,506,922 | |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| V1 | USP5,535,364 | V1 does not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, a module cap |

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| | | comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V11 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | |
| V11 | USP5,580,269 | |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 through V15 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. |

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| W2 | USP5,631,998 | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-----------------|---|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X21 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | |
| X10 | EP.0 456 298 B1 | |
| X11 | EP.0 530 791 A2 | |
| X12 | EP.0 535 473 A1 | |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | |

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| X16 | EP.0 652 696 A1 | |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | |
| X20 | WO 94/12900 | |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| Y1 | JP.2-151084 | Y1 through Y19 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | |
| Y15 | JP.4-270305 | |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Z1 | JP.5-152607 | Z1 through Z19 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | |
| Z4 | JP.5-218581 | |
| Z5 | JP.5-290913 | |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | |
| Z10 | JP.63-16496 | |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |

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| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|---|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver" Feb. 1994 preliminary data sheet.p.2-10 | BB1 through BB11 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173, 1991 | |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber" no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tdbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct.1992 ANSI Meeting, Oct.13, 1992 | |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, , , , , FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug.1993. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|---|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications, " June 23, 1992. | CC1 does not disclose, at least, a module cap comprising a first cap portion and a second cap |

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| | | portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC11 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6., pp241, 264-65, Nov. 1994 | |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|---|
| DD1 | Dieter Gwinner, Conductive Coatings: Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings, no date. | DD1 through DD11 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement, May 11, 1995 | |
| DD3 | Robert C. Herron, High Density Input/Output Connector Systems, 3M Electronic Products Divisions, 1990 | |
| DD4 | Shortwave Opto Assembly, IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev. 1, Jan. 6, 1993 | |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge", IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar., 1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973" Japanese Standards Association, 1990. | |
| DD7 | Ronald LSoderstrom et al., A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)... FOC/LAN'87&MFOC-WEST, pp.383-385, no date. | |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin, Oct. 1979, https://www.delphion.com/tbds/tbd?o=79A+06370 , last visited Mar. 3, 2005. | |

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| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Date Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb. 1994 pp.58,67. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|---|
| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, a module cap comprising a first cap portion and a second cap portion to protect a laser diode module and a photo diode module of an optical module, respectively, such that the first cap portion and the second cap portion are each formed having a cavity with a projection formed therein, and into each of the cavities one of a laser diode module and a photo diode module is at least partially inserted when the module cap is attached to the optical module. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer date links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerdings,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987, https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density,Array,Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 ,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi,The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

Claim Chart for Claim 184 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| A1 | Re.32,502 | A1 through A16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | |
| A14 | USP3,805,116 | |
| A15 | USP3,809,908 | |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| B1 | USP3,990,761 | B1 through B16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | |
| B5 | USP4,167,303 | |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | |
| B9 | USP4,226,491 | |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| C1 | USP4,294,682 | C1 through C16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the |
| C2 | USP4,295,181 | |
| C3 | USP4,301,543 | |
| C4 | USP4,330,870 | |

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| C5 | USP4,345,808 | module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| C6 | USP4,347,655 | |
| C7 | USP4,357,606 | |
| C8 | USP4,360,248 | |
| C9 | USP4,366,565 | |
| C10 | USP4,369,494 | |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| D1 | USP4,408,273 | D1 through D16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| D2 | USP4,422,088 | |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | |
| D6 | USP4,437,190 | |
| D7 | USP4,439,006 | |
| D8 | USP4,446,515 | |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | |
| D15 | USP4,486,059 | |
| D16 | USP4,493,113 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| E1 | USP4,501,021 | E1 through E16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| E2 | USP4,502,130 | |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | |
| E7 | USP4,514,586 | |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |

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| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | |
| E16 | USP4,529,266 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| F1 | USP4,530,566 | F1 through F16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | |
| F5 | USP4,534,616 | |
| F6 | USP4,534,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | |
| F10 | USP4,540,237 | |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| G1 | USP4,544,234 | G1 through G16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| G2 | USP4,545,074 | |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | |
| G10 | USP4,548,467 | |
| G11 | USP4,549,782 | |
| G12 | USP4,549,783 | |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | |
| G16 | USP4,553,814 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| H1 | USP4,556,279 | H1 through H16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | |
| H12 | USP4,580,872 | |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| I1 | USP4,629,270 | I1 through I16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | |
| I4 | USP4,647,148 | |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| J1 | USP4,756,593 | J1 through J16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |

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| J7 | USP4,798,430 | inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| K1 | USP4,840,451 | K1 through K16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| K2 | USP4,844,581 | |
| K3 | USP4,847,711 | |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | |
| K11 | USP4,884,336 | |
| K12 | USP4,897,711 | |
| K13 | USP4,906,197 | |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| L1 | USP4,953,929 | L1 through L16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | |
| L6 | USP4,979,793 | |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |

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|-----|--------------|--|
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| M1 | USP5,035,482 | M1 through M16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | |
| M6 | USP5,044,982 | |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | |
| M16 | USP5,086,422 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| N1 | USP5,091,991 | N1 through N19 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| N2 | USP5,093,879 | |
| N3 | USP5,094,623 | |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | |
| N10 | USP5,116,239 | |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | |
| N16 | USP5,124,885 | |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | |
| N19 | USP5,132,871 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| O1 | USP5,134,677 | O1 through O17 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | |
| O12 | USP5,168,537 | |
| O13 | USP5,170,146 | |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| P1 | USP5,195,911 | P1 through P17 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | |
| P6 | USP5,218,519 | |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | |
| P13 | USP5,247,532 | |
| P14 | USP5,259,052 | |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| Q1 | USP5,274,729 | Q1 through Q16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection |
| Q2 | USP5,285,466 | |
| Q3 | USP5,285,511 | |

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|-----|--------------|--|
| Q4 | USP5,285,512 | formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| Q5 | USP5,286,207 | |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| R1 | USP5,329,604 | R1 through R16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | |
| R5 | USP5,337,396 | |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | |
| R10 | USP5,353,634 | |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | |
| R14 | USP5,361,318 | |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| S1 | USP5,375,040 | S1 through S16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | |

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| S11 | USP5,416,668 | |
| S12 | USP5,416,870 | |
| S13 | USP5,416,872 | |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| T1 | USP5,428,704 | T1 through T4 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| T2 | USP5,434,747 | |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 through T9 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| T7 | USP5,455,703 | |
| T8 | USP5,463,532 | |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, a module cap |

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| T16 | USP5,478,260 | comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
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| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| U1 | USP5,481,634 | U1 through U4 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| U2 | USP5,482,658 | |
| U3 | USP5,487,678 | |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

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| U10 | USP5,506,921 | U10 through U14 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| U11 | USP5,506,922 | |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| V1 | USP5,535,364 | V1 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | |

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| V11 | USP5,580,269 | module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 through V15 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |

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| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-----------------|---|
| X1 | USP5,864,468 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X2 | USP5,879,173 | |
| X3 | DE.4239124 A1 | X3 through X21 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | |
| X10 | EP.0 456 298 B1 | |
| X11 | EP.0 530 791 A2 | |
| X12 | EP.0 535 473 A1 | |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | |
| X16 | EP.0 652 696 A1 | |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | |
| X20 | WO 94/12900 | |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| Y1 | JP.2-151084 | Y1 through Y19 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | |

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| Y15 | JP.4-270305 | |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| Z1 | JP.5-152607 | Z1 through Z19 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | |
| Z4 | JP.5-218581 | |
| Z5 | JP.5-290913 | |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | |
| Z10 | JP.63-16496 | |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|---|--|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 through BB11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that |
| BB2 | Ronald LSoderstrom et al., "An optical Data Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels, pp.163-173,1991 | |
| BB3 | BCP, Inc. "Gigabits Over Multimode Optical Fiber"no date | |

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| BB4 | Ronald L. Soderstrom et al., "CD laser optical Data Links for Workstation and Midrange Computers", IEEE p.505-509, 1993. | the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| BB5 | FDDI Low-Cost Fiber Physical Layer Medium Dependent (LCF-PMD) Common Receiver Footprint, no date. | |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet, http://www.hp.com/HP-COMP/fiber/hfbr5103.html , Jun. 11, 1998 | |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System". www.patents.ibm.com/tlbs/tdb?&order=93A+60964 , April 1993 | |
| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct. 1992 ANSI Meeting, Oct. 13, 1992 | |
| BB9 | IBM, et al, "GLM Family", FCSI-301-Ren Sun, GLM, , , , , FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet, (no date) | |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver", Electronic Engineering Times, Aug. 1993. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|---|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications, " June 23, 1992. | CC1 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922, Dec. 1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6. , pp241, 264-65, Nov. 1994 | |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure, Kenneth Mason Publications Ltd., England, Apr. 1991. | |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd., England, Apr. 1993. | |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik, "Communication Standard Dictionary" p.454. definition of LED, Van Nostrand Reinhold Co. | |
| CC11 | Edward R. Salmon, Encapsulation of Electronic Devices and Components, Marcel Dekker Inc., New York, 1987 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|---|
| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM OptoElectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | |
| DD7 | Ronald L.Soderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN '87&MFOC-WEST,pp.383-385,no date. | |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct. 1979,https://www.delphion.com/tbds/tdb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Date Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb. 1994 pp.58,67. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| EE1 | Fibre Distributed Date Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity, such that the module cap is formed having the laser diode cavity into which a laser diode module is at least partially inserted and the photo diode cavity into which a photo diode module is at least partially inserted. |
| EE2 | Communications Standard Dictionary; p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer date links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerdings,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |

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| EE8 | Minimizing Electrostatic Discharge to a Cartridge, IBM Technical Disclosure Bulletin, March 1987, https://www.delphion.com/tdb?o=87A%2060509 , last visited Mar. 8, 2005. | |
| EE9 | K.P. Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings, IEEE Computer Society Press. | |
| EE10 | TDB: Stackable Circuit Card Packaging within a Logic Cage, IBM Technical Disclosure Bulletin, Dec. 1992, https://www.delphion.com/tbds/tdb?o=92A%2063485 , last visited Mar. 8, 2005 | |
| EE11 | Jeff Hechi, The Laser Guidebook, 2nd ed., McGraw Hill, Inc., 1992 | |

Claim Chart for Claim 185 of 10/766,488

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| A1 | Re.32,502 | A1 through A16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| A2 | USP2,899,669 | |
| A3 | USP3,264,601 | |
| A4 | USP3,332,860 | |
| A5 | USP3,474,380 | |
| A6 | USP3,497,866 | |
| A7 | USP3,523,269 | |
| A8 | USP3,670,290 | |
| A9 | USP3,673,545 | |
| A10 | USP3,706,869 | |
| A11 | USP3,737,729 | |
| A12 | USP3,790,923 | |
| A13 | USP3,792,284 | |
| A14 | USP3,805,116 | |
| A15 | USP3,809,908 | |
| A16 | USP3,976,877 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| B1 | USP3,990,761 | B1 through B16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| B2 | USP4,047,242 | |
| B3 | USP4,156,903 | |
| B4 | USP4,161,650 | |
| B5 | USP4,167,303 | |
| B6 | USP4,176,897 | |
| B7 | USP4,217,019 | |
| B8 | USP4,217,488 | |
| B9 | USP4,226,491 | |
| B10 | USP4,234,968 | |
| B11 | USP4,249,266 | |
| B12 | USP4,252,402 | |
| B13 | USP4,257,124 | |
| B14 | USP4,268,756 | |
| B15 | USP4,273,413 | |
| B16 | USP4,276,656 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| C1 | USP4,294,682 | C1 through C16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| C2 | USP4,295,181 | |
| C3 | USP4,301,543 | |
| C4 | USP4,330,870 | |

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|-----|--------------|--|
| C5 | USP4,345,808 | |
| C6 | USP4,347,655 | |
| C7 | USP4,357,606 | |
| C8 | USP4,360,248 | |
| C9 | USP4,366,565 | |
| C10 | USP4,369,494 | |
| C11 | USP4,380,360 | |
| C12 | USP4,388,671 | |
| C13 | USP4,393,516 | |
| C14 | USP4,398,073 | |
| C15 | USP4,398,780 | |
| C16 | USP4,399,563 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| D1 | USP4,408,273 | D1 through D16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| D2 | USP4,422,088 | |
| D3 | USP4,427,879 | |
| D4 | USP4,430,699 | |
| D5 | USP4,434,537 | |
| D6 | USP4,437,190 | |
| D7 | USP4,439,006 | |
| D8 | USP4,446,515 | |
| D9 | USP4,449,244 | |
| D10 | USP4,449,784 | |
| D11 | USP4,453,903 | |
| D12 | USP4,459,658 | |
| D13 | USP4,461,537 | |
| D14 | USP4,470,154 | |
| D15 | USP4,486,059 | |
| D16 | USP4,493,113 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| E1 | USP4,501,021 | E1 through E16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| E2 | USP4,502,130 | |
| E3 | USP4,505,035 | |
| E4 | USP4,506,937 | |
| E5 | USP4,510,553 | |
| E6 | USP4,511,207 | |
| E7 | USP4,514,586 | |
| E8 | USP4,516,204 | |
| E9 | USP4,519,670 | |
| E10 | USP4,519,672 | |
| E11 | USP4,519,673 | |

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|-----|--------------|--|
| E12 | USP4,522,463 | |
| E13 | USP4,526,438 | |
| E14 | USP4,526,986 | |
| E15 | USP4,527,286 | |
| E16 | USP4,529,266 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| F1 | USP4,530,566 | F1 through F16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| F2 | USP4,531,810 | |
| F3 | USP4,533,208 | |
| F4 | USP4,533,209 | |
| F5 | USP4,534,616 | |
| F6 | USP45,34,617 | |
| F7 | USP4,535,233 | |
| F8 | USP4,537,468 | |
| F9 | USP4,539,476 | |
| F10 | USP4,540,237 | |
| F11 | USP4,540,246 | |
| F12 | USP4,541,036 | |
| F13 | USP4,541,685 | |
| F14 | USP4,542,076 | |
| F15 | USP4,544,231 | |
| F16 | USP4,544,233 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| G1 | USP4,544,234 | G1 through G16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| G2 | USP4,545,074 | |
| G3 | USP4,545,077 | |
| G4 | USP4,545,642 | |
| G5 | USP4,545,643 | |
| G6 | USP4,545,644 | |
| G7 | USP4,545,645 | |
| G8 | USP4,548,465 | |
| G9 | USP4,548,466 | |
| G10 | USP4,548,467 | |
| G11 | USP4,549,782 | |
| G12 | USP4,549,783 | |
| G13 | USP4,550,975 | |
| G14 | USP4,553,811 | |
| G15 | USP4,553,813 | |
| G16 | USP4,553,814 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| H1 | USP4,556,279 | H1 through H16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| H2 | USP4,556,281 | |
| H3 | USP4,556,282 | |
| H4 | USP4,557,551 | |
| H5 | USP4,560,234 | |
| H6 | USP4,563,057 | |
| H7 | USP4,566,753 | |
| H8 | USP4,568,145 | |
| H9 | USP4,569,569 | |
| H10 | USP4,573,760 | |
| H11 | USP4,580,295 | |
| H12 | USP4,580,872 | |
| H13 | USP4,588,256 | |
| H14 | USP4,589,728 | |
| H15 | USP4,597,631 | |
| H16 | USP4,614,836 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| I1 | USP4,629,270 | I1 through I16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| I2 | USP4,634,239 | |
| I3 | USP4,641,371 | |
| I4 | USP4,647,148 | |
| I5 | USP4,652,976 | |
| I6 | USP4,663,240 | |
| I7 | USP4,663,603 | |
| I8 | USP4,678,264 | |
| I9 | USP4,679,883 | |
| I10 | USP4,695,106 | |
| I11 | USP4,697,864 | |
| I12 | USP4,708,433 | |
| I13 | USP4,715,675 | |
| I14 | USP4,720,630 | |
| I15 | USP4,722,584 | |
| I16 | USP4,736,100 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| J1 | USP4,756,593 | J1 through J16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| J2 | USP4,762,388 | |
| J3 | USP4,767,179 | |
| J4 | USP4,772,931 | |
| J5 | USP4,779,952 | |
| J6 | USP4,789,218 | |

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|-----|--------------|--|
| J7 | USP4,798,430 | |
| J8 | USP4,798,440 | |
| J9 | USP4,807,006 | |
| J10 | USP4,807,955 | |
| J11 | USP4,808,115 | |
| J12 | USP4,811,165 | |
| J13 | USP4,812,133 | |
| J14 | USP4,821,145 | |
| J15 | USP4,823,235 | |
| J16 | USP4,838,630 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| K1 | USP4,840,451 | K1 through K16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| K2 | USP4,844,581 | |
| K3 | USP4,847,711 | |
| K4 | USP4,847,771 | |
| K5 | USP4,849,944 | |
| K6 | USP4,857,002 | |
| K7 | USP4,862,327 | |
| K8 | USP4,872,212 | |
| K9 | USP4,872,736 | |
| K10 | USP4,881,789 | |
| K11 | USP4,884,336 | |
| K12 | USP4,897,711 | |
| K13 | USP4,906,197 | |
| K14 | USP4,927,225 | |
| K15 | USP4,944,568 | |
| K16 | USP4,945,448 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| L1 | USP4,953,929 | L1 through L16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| L2 | USP4,955,817 | |
| L3 | USP4,963,104 | |
| L4 | USP4,967,312 | |
| L5 | USP4,977,329 | |
| L6 | USP4,979,793 | |
| L7 | USP4,979,794 | |
| L8 | USP4,986,625 | |
| L9 | USP4,989,934 | |
| L10 | USP4,990,104 | |
| L11 | USP4,991,062 | |
| L12 | USP5,002,495 | |
| L13 | USP5,004,434 | |

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|-----|--------------|--|
| L14 | USP5,006,286 | |
| L15 | USP5,011,425 | |
| L16 | USP5,029,254 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| M1 | USP5,035,482 | M1 through M16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| M2 | USP5,035,641 | |
| M3 | USP5,040,993 | |
| M4 | USP5,041,025 | |
| M5 | USP5,043,775 | |
| M6 | USP5,044,982 | |
| M7 | USP5,045,635 | |
| M8 | USP5,045,971 | |
| M9 | USP5,046,955 | |
| M10 | USP5,060,373 | |
| M11 | USP5,071,219 | |
| M12 | USP5,076,656 | |
| M13 | USP5,076,688 | |
| M14 | USP5,082,344 | |
| M15 | USP5,084,802 | |
| M16 | USP5,086,422 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| N1 | USP5,091,991 | N1 through N19 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| N2 | USP5,093,879 | |
| N3 | USP5,094,623 | |
| N4 | USP5,101,463 | |
| N5 | USP5,104,243 | |
| N6 | USP5,107,404 | |
| N7 | USP5,108,294 | |
| N8 | USP5,109,453 | |
| N9 | USP5,113,467 | |
| N10 | USP5,116,239 | |
| N11 | USP5,117,476 | |
| N12 | USP5,118,362 | |
| N13 | USP5,118,904 | |
| N14 | USP5,120,578 | |
| N15 | USP5,122,893 | |
| N16 | USP5,124,885 | |
| N17 | USP5,125,849 | |
| N18 | USP5,127,071 | |
| N19 | USP5,132,871 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| O1 | USP5,134,677 | O1 through O17 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| O2 | USP5,134,679 | |
| O3 | USP5,136,063 | |
| O4 | USP5,136,152 | |
| O5 | USP5,136,603 | |
| O6 | USP5,138,537 | |
| O7 | USP5,138,678 | |
| O8 | USP5,140,663 | |
| O9 | USP5,155,786 | |
| O10 | USP5,157,769 | |
| O11 | USP5,167,139 | |
| O12 | USP5,168,537 | |
| O13 | USP5,170,146 | |
| O14 | USP5,171,167 | |
| O15 | USP5,173,059 | |
| O16 | USP5,183,404 | |
| O17 | USP5,183,405 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| P1 | USP5,195,911 | P1 through P17 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| P2 | USP5,202,536 | |
| P3 | USP5,207,597 | |
| P4 | USP5,212,752 | |
| P5 | USP5,212,754 | |
| P6 | USP5,218,519 | |
| P7 | USP5,225,760 | |
| P8 | USP5,233,676 | |
| P9 | USP5,233,674 | |
| P10 | USP5,234,353 | |
| P11 | USP5,238,426 | |
| P12 | USP5,241,614 | |
| P13 | USP5,247,532 | |
| P14 | USP5,259,052 | |
| P15 | USP5,259,054 | |
| P16 | USP5,262,923 | |
| P17 | USP5,271,079 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| Q1 | USP5,274,729 | Q1 through Q16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection |
| Q2 | USP5,285,466 | |
| Q3 | USP5,285,511 | |

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|-----|--------------|---------------------------------|
| Q4 | USP5,285,512 | formed in a photo diode cavity. |
| Q5 | USP5,286,207 | |
| Q6 | USP5,286,247 | |
| Q7 | USP5,288,247 | |
| Q8 | USP5,289,347 | |
| Q9 | USP5,296,813 | |
| Q10 | USP5,299,089 | |
| Q11 | USP5,304,069 | |
| Q12 | USP5,305,182 | |
| Q13 | USP5,311,408 | |
| Q14 | USP5,315,679 | |
| Q15 | USP5,317,663 | |
| Q16 | USP5,321,819 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| R1 | USP5,329,604 | R1 through R16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| R2 | USP5,333,221 | |
| R3 | USP5,333,225 | |
| R4 | USP5,337,391 | |
| R5 | USP5,337,396 | |
| R6 | USP5,340,340 | |
| R7 | USP5,345,524 | |
| R8 | USP5,345,530 | |
| R9 | USP5,353,364 | |
| R10 | USP5,353,634 | |
| R11 | USP5,356,300 | |
| R12 | USP5,357,402 | |
| R13 | USP5,361,244 | |
| R14 | USP5,361,318 | |
| R15 | USP5,366,664 | |
| R16 | USP5,372,515 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| S1 | USP5,375,040 | S1 through S16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| S2 | USP5,383,793 | |
| S3 | USP5,388,995 | |
| S4 | USP5,390,268 | |
| S5 | USP5,393,249 | |
| S6 | USP5,397,242 | |
| S7 | USP5,398,154 | |
| S8 | USP5,398,295 | |
| S9 | USP5,408,384 | |
| S10 | USP5,414,787 | |

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|-----|--------------|--|
| S11 | USP5,416,668 | |
| S12 | USP5,416,870 | |
| S13 | USP5,416,872 | |
| S14 | USP5,419,717 | |
| S15 | USP5,424,573 | |
| S16 | USP5,428,703 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|---|
| T1 | USP5,428,704 | T1 through T4 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| T2 | USP5,434,747 | |
| T3 | USP5,443,390 | |
| T4 | USP5,446,814 | |
| T5 | USP5,452,387 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T6 | USP5,454,080 | T6 through T9 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| T7 | USP5,455,703 | |
| T8 | USP5,463,532 | |
| T9 | USP5,469,332 | |
| T10 | USP5,470,257 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T11 | USP5,470,259 | |
| T12 | USP5,475,734 | T12 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| T13 | USP5,477,418 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| T14 | USP5,478,253 | |
| T15 | USP5,478,259 | T15 and T16 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| T16 | USP5,478,260 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| U1 | USP5,481,634 | U1 through U4 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| U2 | USP5,482,658 | |
| U3 | USP5,487,678 | |
| U4 | USP5,491,613 | |
| U5 | USP5,491,712 | This reference does not qualify as prior art. |

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| | | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U6 | USP5,494,747 | U6 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| U7 | USP5,499,311 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U8 | USP5,499,312 | U8 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| U9 | USP5,504,657 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U10 | USP5,506,921 | U10 through U15 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| U11 | USP5,506,922 | |
| U12 | USP5,507,668 | |
| U13 | USP5,526,235 | |
| U14 | USP5,527,991 | |
| U15 | USP5,534,662 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| U16 | USP5,535,296 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| V1 | USP5,535,364 | V1 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| V2 | USP5,545,845 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V3 | USP5,546,281 | |
| V4 | USP5,547,385 | |
| V5 | USP5,548,641 | V5 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| V6 | USP5,548,677 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, |

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| | | 1994, in Japan. |
| V7 | USP5,554,031 | V7 through V11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| V8 | USP5,554,037 | |
| V9 | USP5,567,167 | |
| V10 | USP5,577,064 | |
| V11 | USP5,580,269 | |
| V12 | USP5,588,850 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| V13 | USP5,598,319 | V13 through V15 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| V14 | USP5,599,595 | |
| V15 | USP5,600,470 | |
| V16 | USP5,613,860 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| W1 | USP5,629,919 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W2 | USP5,631,998 | |
| W3 | USP5,653,596 | |
| W4 | USP5,659,459 | W4 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| W5 | USP5,675,428 | These references do not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| W6 | USP5,687,267 | |
| W7 | USP5,717,533 | |
| W8 | USP5,724,729 | |
| W9 | USP5,726,864 | |
| W10 | USP5,734,558 | |
| W11 | USP5,736,782 | |
| W12 | USP5,747,735 | |
| W13 | USP5,767,999 | |
| W14 | USP5,779,504 | |
| W15 | USP5,797,771 | |
| W16 | USP5,836,774 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
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| X1 | USP5,864,468 | These references do not qualify as prior art. |

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| X2 | USP5,879,173 | Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| X3 | DE.4239124 A1 | X3 through X21 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| X4 | EP 0 232792 A1 | |
| X5 | EP.0 228 278 | |
| X6 | EP.0 305112 A2 | |
| X7 | EP.0 314 651 A2 | |
| X8 | EP.0 413 489 A2 | |
| X9 | EP.0 437 161 A2 | |
| X10 | EP.0 456 298 B1 | |
| X11 | EP.0 530 791 A2 | |
| X12 | EP.0 535 473 A1 | |
| X13 | EP.0 588 014 A2 | |
| X14 | EP.0 600 645 A1 | |
| X15 | EP.0 613 032 A2 | |
| X16 | EP.0 652 696 A1 | |
| X17 | EP.0 656 696 A1 | |
| X18 | EP.0 662 259 B1 | |
| X19 | EP.442 608 A2 | |
| X20 | WO 94/12900 | |
| X21 | JP.1-237783 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|--|
| Y1 | JP.2-151084 | Y1 through Y19 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| Y2 | JP.2-181710 | |
| Y3 | JP.2-278212 | |
| Y4 | JP.2-87837 | |
| Y5 | JP.3-20458 | |
| Y6 | JP.3-94869 | |
| Y7 | JP.4-109593 | |
| Y8 | JP.4-122905 | |
| Y9 | JP.4-165312 | |
| Y10 | JP.4-211208 | |
| Y11 | JP.4-221207 | |
| Y12 | JP.4-229962 | |
| Y13 | JP.4-230978 | |
| Y14 | JP.4-234715 | |
| Y15 | JP.4-270305 | |
| Y16 | JP.4-50901 | |
| Y17 | JP.4-87809 | |
| Y18 | JP.5-052802 | |
| Y19 | JP.5-134147 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--------------|--|
| Z1 | JP.5-152607 | Z1 through Z19 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| Z2 | JP.5-188250 | |
| Z3 | JP.5-211379 | |
| Z4 | JP.5-218581 | |
| Z5 | JP.5-290913 | |
| Z6 | JP.5-70955 | |
| Z7 | JP.61-158046 | |
| Z8 | JP.61-188385 | |
| Z9 | JP.63-009325 | |
| Z10 | JP.63-16496 | |
| Z11 | JP.63-65967 | |
| Z12 | JP.63-65978 | |
| Z13 | JP.63-82998 | |
| Z14 | U-3-20458 | |
| Z15 | U-3-94869 | |
| Z16 | U-4-87809 | |
| Z17 | U-5-052802 | |
| Z18 | U-5-70955 | |
| Z19 | U-61-158046 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|-------------|---|
| AA1 | U-61-188385 | AA1 through AA5 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| AA2 | U-63-16496 | |
| AA3 | U-63-65967 | |
| AA4 | U-63-65978 | |
| AA5 | U-63-82998 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|--|
| BB1 | AT&T Microelectronics, "1408-Type ODL Transceiver"Feb. 1994 preliminary data sheet.p.2-10 | BB1 through BB11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| BB2 | Ronald LSoderstrom et al., "An optical Date Link using a CD laser", SPIE Vol.1577 High Speed Fiber Networks and Channels,pp.163-173,1991 | |
| BB3 | BCP,Inc."Gigabits Over Multimode Optical Fiber"no date | |
| BB4 | Ronald L.Soderstrom et al., "CD laser optical Date Links for Workstation and Midrange Computers", IEEE p.505-509,1993. | |
| BB5 | FDDI Low-Cost Fiber Physiscal Layer Medium Dependent (LCF-PMD) Common Receiver Footprint,no date. | |
| BB6 | HP Module HFBR-5103, FDDI Data Sheet,http://www.hp.com/HP-COMP/fiber/hfbr5103.html,Jun.11,1998 | |
| BB7 | IBM Technical Disclosure Bulletin "Optical Link Card Guide/Retention System", www.patents.ibm.com/tdbs/tdb?&order=93A+60964, April 1993 | |

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| BB8 | IBM, "A Proposal for a New High Performance... "Optoelectronics Enterprise Oct.1992 ANSI Meeting,Oct.13,1992 | |
| BB9 | IBM, et al,"GLM Family",FCSI-301-Ren Sun, GLM, ,,,,,, FCSI-301-Rev1.0, Feb. 16, 1994. | |
| BB10 | Methode Electronics, Inc., "DM 1063-DBLM9 Copper Gigabit Link Module" data sheet.(no date) | |
| BB11 | "Raylan Joins Low-Wavelength Push -850 nm Transceiver",Electronic Engineering Times,Aug.1993. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|--|---|
| CC1 | Sumitomo Electric Fiber Optics Corp. "Transceiver Manufacturers to Support Common Footprint for Desktop FDDI Applications," June 23, 1992. | CC1 does not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| CC2 | Sun Microsystems computer Co. et al., Gigabit Interface Converter (GBIC), Rev 4.4, Dec. 1, 1997 | This reference does not qualify as prior art. Applicants have claimed priority to Japanese Application No. 06-086691, filed on April 25, 1994, in Japan. |
| CC3 | Siemens, "Who provides Low-Cost Transceivers for all Standards?" no date. | CC3 through CC11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| CC4 | AMP "PC Board Connectors", Product Guide 82759, pp. 7104-7108, Catalog E2750 issued Jun. 1991 | |
| CC5 | AMP Inc. "Lytel Molded-Optronic SC Duplex Transceiver" Catalog 65922,Dec.1993. | |
| CC6 | AMPHENOL Engineering News vol. 7 No. 6. , pp241, 264-65, Nov. 1994 | |
| CC7 | Baldwin and Kellerman, "Fiber Optic Module Interface Attachment" Research disclosure,Kenneth Mason Publications Ltd.,England,Apr.1991. | |
| CC8 | Block and Gaio "Optical Link Card guide/Retention Sys" RESEARCH DISCLOSURE Kenneth Mason Publications Ltd.,England,Apr.1993. | |
| CC9 | Cinch Hinge Connectors Catalog CM-16, Jul. 1963. | |
| CC10 | Martin H. Weik,"Communication Standard Dictionary"p.454.definition of LED,Van Nostrand Reinhold Co. | |
| CC11 | Edward R.Salmon,Encapsulation of Electronic Devices and Components,Marcel Dekker Inc.,New York,1987 | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|-----|--|---|
| DD1 | Dieter Gwinner,Conductive Coatings:Vacuum Evaporated Aluminum for Selective Shielding of Plastic Housings,no date. | DD1 through DD11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| DD2 | HEADS Up--Sumitomo Electric Lightwave joins Other in Announcement,May 11,1995 | |
| DD3 | Robert C. Herron,High Density Input/Output Connector Systems,3M Electronic Products Divisions,1990 | |
| DD4 | Shortwave Opto Assembly,IBM Optoelectronic Enterprises; IBM/OEE Market Survey Only, Rev.1,Jan.6,1993 | |
| DD5 | "Minimizing Electrostatic Discharge Damage to a Cartridge",IBM Technical Disclosure Bulletin, vol. 29 No. 10. Mar.,1987 | |
| DD6 | Japanese Standards Association " F04 Type Connectors for Optical Fiber Cords JIS C 5973"Japanese Standards Association,1990. | |

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| DD7 | Ronald LSoderstrom et al.,A Miniaturized Fiber Optic Laser Receptacle Using a Compact Disk(CD)··· FOC/LAN'87&MFOC-WEST,pp.383-385,no date. | |
| DD8 | "Transceiver Module Assembly", IBM Technical Disclosure Bulletin,Oct.1979,https://www.delphion.com/tbds/tdb?o=79A+06370,last visited Mar.3,2005. | |
| DD9 | Ronald L.Soderstrom et al.,Optical Components and Electronic Packaging for High Performance Optical Data Links,THE RESEARCH INVESTMENT,p.19-28(no date). | |
| DD10 | Thomas & Betts INFO-LAN Modem 1998 | |
| DD11 | "Active component manufacturers lower the cost of fiber to the desktop",Lightwave,Feb.1994 pp.58,67. | |

| Ref | Title | Distinction between reference(s) and claim(s) |
|------|---|--|
| EE1 | Fibre Distributed Data Interface(FDDI)-Token Ring Low-Cost Fibre Physical Layer Medium Dependent (LCF-PMD),American National Standards Institute,1996. | EE1 through EE11 do not disclose, at least, a module cap comprising a laser diode projection formed in a laser diode cavity and a photo diode projection formed in a photo diode cavity. |
| EE2 | Communications Standard Dictionary, p.454,definition of inhomogeneous fiber,Van Nostrand Reinhold Publishing,1983 | |
| EE3 | "Transmitter/receiver assembly simplifies use of fibre optics", Design Engineering,p.19,Button Press,Ltd.,April 1980. | |
| EE4 | Ronald L.Soderstrom et al., "CD laser as a fiber optic source for computer data links",Fiber Optic Datacom and Computer Networks,SPIE-The International Society for Optical Engineerings,Vol.1577,pp.174-181,1988 | |
| EE5 | David A.Knodel et al., "Open Fibre Control,a laser safety interlock technique",High-Speed Fiber Networks and Channels,SPIE-The International Society for Optical Engineering Proceedings,Vol.991,pp.179-182,1992 | |
| EE6 | "IBM Technical Disclosure Bulletin, Electrostatic Dissipative Enclosed Connector", Vol.34,No.7B,Dec.1991 | |
| EE7 | "High Reliability SW Laser For Optical Data Links", LEOS '93 Conference Proceedings, IEEE Lasers and Electro-Optics Society 1993 Annual Meeting; | |
| EE8 | Minimizing Electrostatic Discharge to a Cartridge,IBM Technical Disclosure Bulletin,March 1987,https://www.delphion.com/tdb?o=87A%2060509 ,last visited Mar.8,2005. | |
| EE9 | K.P.Jackson et al., "High-Density, Array, Optical Interconnects for Multi-Chip Module Conference MCMC-92 Proceedings,IEEE Computer Society Press. | |
| EE10 | TDB:Stackable Circuit Card Packaging within a Logic Cage,IBM Technical Disclosure Bulletin,Dec.1992,https://www.delphion.com/tbds/tdb?o=92A%2063485,last visited Mar.8,2005 | |
| EE11 | Jeff Hechi,The Laser Guidebook,2nd ed.,McGraw Hill,Inc.,1992 | |

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